CLAIMS

What is claimed as the invention is:

1. Monoclonal antibody 1A7.

2. An antibody producing cell deposited under ATCC Accession No. HB-11786, and the progeny thereof.

3. An antibody producing cell having all the identifying characteristics of a cell according to claim 2.

4. A purified antibody having identifying characteristics identical to antibody produced by a cell according to claim 2.

5. A polynucleotide comprising a sequence encoding a polypeptide with immunological activity of monoclonal antibody 1A7, wherein the polypeptide comprises at least 5 consecutive amino acids from a variable region of monoclonal antibody 1A7.

6. A polynucleotide according to claim 5, wherein the variable region is from a light chain.

7. A polynucleotide according to claim 5, wherein the variable region is from a heavy chain.

8. The polynucleotide of claim 5, wherein the 5 consecutive amino acids is contained in SEQ. ID NO:2.

9. The polynucleotide of claim 5, wherein the 5 consecutive amino acids is contained in SEQ. ID NO:4.

10. The polynucleotide of claim 5, wherein the encoding sequence is contained in SEQ. ID NO:1.

11. The polynucleotide of claim 5, wherein the encoding sequence is contained in SEQ. ID NO:3.

12. An polynucleotide according to claim 5, wherein the polynucleotide encodes at least 5 consecutive amino acids of a complementarity determining region (CDR).

13. An isolated polynucleotide comprising a region of at least 20 consecutive nucleotides that is capable of forming a stable duplex with a polynucleotide consisting of the light chain variable region encoding sequence of SEQ. ID NO:1 under conditions where the region does not form a stable hybrid with a polynucleotide consisting of a variable region encoding sequence of a sequence selected from the group consisting of SEQ. ID NOS:17-26.

14. An isolated polynucleotide comprising a region of at least 20 consecutive nucleotides that is capable of forming a stable duplex with a polynucleotide consisting of the heavy chain variable region encoding sequence of SEQ. ID NO:3 under conditions where the region does not form a stable hybrid with a polynucleotide consisting of a variable region encoding sequence of a sequence selected from the group consisting of SEQ. ID NOS:27-44.

15. A polynucleotide according to claim 5, wherein the polynucleotide is a cloning vector.

16. A polynucleotide according to claim 5, wherein the polynucleotide is an expression vector.

17. The expression vector of claim 16, wherein the expression vector is vaccinia.

18. A host cell comprising a polynucleotide according to claim 5.

19. A polypeptide having immunological activity of monoclonal antibody 1A7, wherein the polypeptide comprises at least 5 consecutive amino acids from a variable region of monoclonal antibody 1A7.

20. A polypeptide according to claim 19, wherein the variable region is from a light chain.

21 A polypeptide according to claim 19, wherein the variable region is from a heavy chain.

22.. The polypeptide of claim 19, wherein the 5 consecutive amino acids is contained in SEQ. ID NO:2.

23. The polypeptide of claim 19, wherein the 5 consecutive amino acids is contained in SEQ. ID NO:4.

24. A polypeptide of claim 19, wherein the 5 consecutive amino acids are from a complementarity determining region (CDR).

25.. A fusion polypeptide comprising the polypeptide of claim 19.

26. The fusion polypeptide of claim 25, comprising at least 10 consecutive amino acids of SEQ. ID NO:2 and at least 10 consecutive amino acids of SEQ. ID NO:4.

27. The fusion polypeptide of claim 26, wherein the amino acids of SEQ. ID NO:2 and the amino acids of SEQ. ID NO:4 are joined by a linker polypeptide of 5 to 20 amino acids.

28. The fusion polypeptide of claim 25, comprising a light chain variable region and a heavy chain variable region of monoclonal antibody 1A7.

29. The fusion polypeptide of claim 25, further comprising a cytokine.

30. The fusion polypeptide of claim 29, wherein the cytokine is GM-CSF.

31. The fusion polypeptide of claim 29, wherein the cytokine is IL-2.

32. The fusion polypeptide of claim 19 further comprising a heterologous immunoglobulin constant region.

33. A humanized antibody comprising the polypeptide of claim 19.

34. A polymeric 1A7 polypeptide comprising a plurality of the polypeptide of claim 19.

35. A pharmaceutical composition comprising monoclonal antibody 1A7 of claim 1 and a pharmaceutically acceptable excipient.

36. A pharmaceutical composition comprising the polynucleotide of claim 5 and a pharmaceutically acceptable excipient.

37. A pharmaceutical composition comprising the polypeptide of claim 19 and a pharmaceutically acceptable excipient.

38. A vaccine comprising monoclonal antibody 1A7 of claim 1 and a pharmaceutically acceptable excipient.

39. A vaccine comprising the polynucleotide of claim 5 and a pharmaceutically acceptable excipient.

40. A vaccine comprising the polypeptide of claim 19 and a pharmaceutically acceptable excipient.

41. The vaccine of claim 38, comprising an adjuvant.

42. The vaccine of claim 39, wherein the polynucleotide is comprised in a viral expression vector.

43. The vaccine of claim 42 wherein the viral expression vector is vaccinia.

44. A method of eliciting an immune response in an individual, comprising administering to the individual an effective amount of the monoclonal antibody 1A7 of claim 1.

45. A method of eliciting an immune response in an individual, comprising administering to the individual an effective amount of the polynucleotide of claim 5.

46. A method of eliciting an immune response in an individual, comprising administering to the individual an effective amount of the polypeptide of claim 19.

47. A method of treating a GD2-associated disease in an individual, comprising administering to the individual an effective amount of the monoclonal antibody 1A7 of claim 1.

48. A method of treating a GD2-associated disease in an individual, comprising administering to the individual an effective amount of the polynucleotide of claim 5.

49. A method of treating a GD2-associated disease in an individual, comprising administering to the individual an effective amount of the polypeptide of claim 19.

50. The method of claim 47, wherein the GD2-associated disease is selected from the group consisting of melanoma, neuroblastoma, glioma, soft tissue sarcoma, and small cell carcinoma.

51. The method of claim 47, wherein the individual has a clinically detectable tumor.

52. The method of claim 47, which is a method for palliating the GD2-associated disease.

53. The method of claim 47, wherein a tumor that was previously detected in the individual has been treated and is clinically undetectable at the time of the administering of the monoclonal antibody 1A7.

54. The method of claim 47, which is a method of reducing the risk of recurrence of a clinically detectable tumor.

55. A method for detecting the presence of an anti-GD2 antibody bound to a tumor cell comprising contacting the tumor cell with monoclonal antibody 1A7 according to claim 1 under conditions that permit the monoclonal antibody 1A7 to bind to the anti-GD2 antibody, and detecting any monoclonal antibody 1A7 that has bound.

56. A kit for detection or quantitation of an anti-GD2 antibody in a sample, comprising monoclonal antibody 1A7 according to claim 1 in suitable packaging.

57. A kit for detection or quantitation of an anti-GD2 antibody in a sample, comprising the polypeptide of claim 19 in suitable packaging.

58. A kit for detection or quantitation of a polynucleotide with a 1A7 encoding sequence in a sample, comprising the isolated polynucleotide of claim 13 in suitable packaging.

59. A kit for detection or quantitation of a polynucleotide with a 1A7 encoding sequence in a sample, comprising the isolated polynucleotide of claim 14 in suitable packaging.

60. A method for detecting an anti-GD2 antibody in a sample, comprising the steps of:

a) contacting antibody in the sample with the polypeptide of claim 19 under conditions that permit the formation of a stable antibody-polypeptide complex; and

b) detecting any stable complex formed in step a).

61. Anti-idiotype monoclonal antibody 1A7, having all the identifying characteristics of ATCC Accession No. HB-11786.